

REMARKS

This is intended as a full and complete response to the Office Action dated April 23, 2003, having a shortened statutory period for response set to expire on July 23, 2003. Please reconsider the claims pending in the application for reasons discussed below. Claims 25-30, 32-37 and 39-66 remain pending in the application and are shown above. Claims 67-76 have been added. Reconsideration of the rejected claims is requested for reasons presented below.

Claim Rejections -35 USC § 102

Claim 47 has been rejected under 35 U.S.C. 102(b) as being anticipated by *Jewell et al.* (U.S. Patent No. 5,367,911, hereinafter "*Jewell*"). The Office Action states that:

Jewell discloses an apparatus for sensing flow within a pipe (fig. 4, ref. 42) using an acoustic sensing device for providing an acoustic signal indicative of the speed of sound in the fluid flowing within the pipe (col. 12, lines 17-28) and a flow velocity sensing device (fig. 5-8, ref. 108, 112) coupled to the acoustic device for providing a velocity signal indicative of the speed of the fluid flowing within the pipe (col. 9, lines 1-15).

Applicants submit, however, that the apparatus in *Jewell* is an intrusive type sensor disposed within fluid flowing in casing or production pipe (e.g., within casing or production pipe, see lines) and that the sensor in *Jewell* senses the flow of fluid surrounding the sensor (see SUMMARY OF THE INVENTION, col. 3, lines 9-11 and col. 5, lines 62-65, among other locations in *Jewell*). As such, the apparatus disclosed in *Jewell* has the disadvantage that it undesirably impedes flow of the fluid. The claimed apparatus, on the other hand, is non-intrusive with respect to the fluid, and does not sense the fluid velocity directly in contact with the sensor but rather senses vortical pressure disturbances that travel with the fluid. Accordingly, Applicants submit that the apparatus claimed in claim 47 is not anticipated by *Jewell* and respectfully request removal of this rejection.

Claim Rejections -35 USC § 103

Claims 25-26, 30-48, and 52-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Berthold et al.* (U.S. Patent No. 5,845,033, hereinafter "*Berthold*") in view of *Kluth* (U.S. Patent No. 5,804,713).

Regarding claims 25 and 47, the Examiner states that *Berthold* discloses an apparatus for sensing flow within a pipe using a flow velocity sensing device attached to the outside wall of the pipe to provide a velocity signal indicative of local pressure variations within the pipe. The Examiner acknowledges that *Berthold* fails to specifically disclose an acoustic sensing device attached to the outside wall of the pipe to provide a signal indicative of the acoustic pressure variations within the pipe. However, the Examiner states that *Kluth* discloses an acoustic sensing device attached to the outside wall of the pipe to provide a signal indicative of the acoustic pressure variations within the pipe. The Examiner further states that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have also included an acoustic sensing device attached to the outside wall of the pipe to provide a signal indicative of the acoustic pressure variations within the pipe.

Applicants respectfully submit, however, that *Berthold* does not disclose sensors for monitoring flow velocity in the pipe, as stated in the Office Action, but rather sensors for monitoring pressure gradients along the pipe that occur as a result of wax build up, without regard to the velocity of the fluid flowing within the pipe. Applicants further submit that *Kluth* does not teach sensing speed of sound in the fluid, as stated in the Office Action. While *Kluth* does refer to monitoring acoustic signals as they may relate to sand detection, pumps, monitoring, and fluid monitoring in the reservoir, there is no

mention of monitoring acoustic signals associated with the fluid flowing in the pipe and certainly no teaching of determining the speed at which sound travels within the fluid therefrom.

Accordingly, Applicants submit that claims 25 and 47 are patentable over *Berthold* in light of *Kluth* and respectfully request removal of this rejection with respect to these claims. Claims 26 and 48, 30, 32-37, 39-46 and 52-66, are also rejected as unpatentable over *Berthold* in light of *Kluth*. However, as each of these claims depend, either directly or indirectly, from claims 25 or 47, Applicants submit that these claims are also patentable over *Berthold* in light of *Kluth* and request removal of this rejection with respect to these claims, as well.

Claims 27-29 and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Berthold* and *Kluth*, and in further view of *Layton et al.* (U.S. Patent No. 5,363,342, from hereinafter "*Layton*"). Applicants submit that the teachings of *Layton* do not affect the patentability of claims 25 and 47. Therefore, as each of these claims also depend, either directly or indirectly, from claims 25 or 47, Applicants submit that these claims are also patentable over *Berthold* in light of *Kluth* and in further view of *Layton* and request removal of this rejection with respect to these claims.

CONCLUSION

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed. Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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